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## **CLAIMS**

1. A method comprising steps of:

supplying a precursor gas for growing a polycrystalline silicon-germanium region and a single crystal silicon-germanium region;

growing said polycrystalline silicon-germanium region in a mass controlled mode at a first pressure of said precursor gas and a first temperature;

growing said single crystal silicon-germanium region in a kinetically controlled mode at said first pressure of said precursor gas and said first temperature.

- 2. The method of claim 1 wherein said precursor gas comprises germanium and hydrogen.
- 3. The method of claim 1 wherein said polycrystalline silicon-germanium region is in contact with said single crystal silicon-germanium region.
- 4. The method of claim 1 wherein said polycrystalline silicon-germanium region is a base contact in a heterojunction bipolar transistor.
- 5. The method of claim 1 wherein said single crystal silicon-germanium region is a base in a heterojunction bipolar transistor.

Torr.

- 6. The method of claim 1 wherein said first pressure is approximately 100
- 7. The method of claim 1 wherein said first temperature is approximately 650° 5 C.
  - 8. The method of claim 1 wherein said single crystal silicon-germanium region comprises approximately 8% germanium and 92% silicon.
  - 9. The method of claim 1 wherein said polycrystalline silicon-germanium region grows approximately twice as fast as said single crystal silicon-germanium region.
  - 10. A method for fabricating a heterojunction bipolar transistor, said method comprising steps of:
- growing a collector in a silicon substrate;

growing in a kinetically controlled mode a single crystal silicon-germanium base forming a junction with said collector;

growing in a mass controlled mode a polycrystalline silicon-germanium base contact for electrical connection to said base;

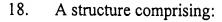
growing a polycrystalline silicon emitter forming a junction with said base.



- 11. The method of claim 10 wherein said growing in said kinetically controlled mode is performed concurrently with said growing in said mass controlled mode.
- The method of claim 10 further comprising a step of supplying a precursor
   gas prior to said step of growing in said kinetically controlled mode.
  - 13. The method of claim 12 wherein said precursor gas comprises hydrogen and germanium.
  - 14. The method of claim 12 wherein said step of growing in said kinetically controlled mode and said step of growing in said mass controlled mode are performed at a pressure of approximately 100 Torr and a temperature of approximately 650° C.
  - 15. The method of claim 10 wherein said base comprises approximately 8% germanium and 92% silicon.
  - 16. The method of claim 10 wherein said polycrystalline silicon-germanium base contact grows approximately twice as fast as said single crystal silicon-germanium base.

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17. The method of claim 10 wherein said base contact has a resistance of approximately 650 ohms per micrometer.



a collector comprising a single crystal silicon;

a base comprising a single crystal silicon-germanium, wherein said base is grown
in a kinetically controlled mode at a first temperature and a first pressure of a precursor
gas, said base and said collector forming a base-collector junction;

an emitter comprising polycrystalline silicon, said emitter and said base forming a base-emitter junction;

a base contact comprising polycrystalline silicon-germanium, said base contact being in electrical contact with said base, wherein said base contact is grown in a mass controlled mode at said first pressure and said first temperature of said precursor gas.

- 19. The structure of claim 18 wherein said base contact is grown concurrently with said base.
- 20. The structure of claim 18 wherein said precursor gas comprises germanium and hydrogen.
- 21. The structure of claim 18 wherein said first pressure is approximately 10020 Torr.

- 22. The structure of claim 18 wherein said first temperature is approximately 650° C.
- 23. The structure of claim 18 wherein said base comprises approximately 8% germanium and 92% silicon.
- 24. The structure of claim 18 wherein said base contact resistance is approximately 650 ohms per micrometer.